

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE
BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application: William L. Brenneman
Andrew J. Vacco
Szuchain F. Chen

Application No.: 10/727,920

Filing Date: December 4, 2003

Group Art: 1775

Examiner: Cathy Fong Fong Lam

Title: PEEL STRENGTH ENHANCEMENT OF COPPER LAMINATES

Attorney Docket: 6113B-000859/US

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF

Sir:

In response to the Examiner's Answer of December 26, 2007, Applicant submits the following reply brief:

On page 3 of the Examiner's Answer, the Examiner takes the position that LIN's anti-tarnish treatment of chromium and chromium oxide resembles the peel strength enhancement coating of the present invention. This is not the case.

LIN discloses various solutions for providing an anti-tarnish treatment, including an aqueous chromic acid-phosphoric acid solution, an aqueous chromic acid-sulfuric acid solution, and electrolytically depositing chromium and zinc ions on the foil. The Appellant submits that LIN's disclosed aqueous chromic-phosphoric acid solutions or electrolytically deposited chromium ions create coatings that are structurally different from that claimed.

Contrary to LIN, the present application describes a peel strength coating in ¶ [0042] that contain oxyanions formed from a metal or metal oxide. This coating, or surface treatment 2 uses "an aqueous solution containing polyatomic anions that contain oxygen (oxyanions) formed from a metal selected from groups 5B, 6B, and 7B of the period table of the elements...the oxyanion containing the largest number of anions is most preferred (i.e., the "ate" -, where "Group 6B includes chromium, molybdenum, and tungsten". (see ¶ [0042])). (An oxyanion is a polyatomic anion that contains oxygen, which can include a terminal metal element.) The Appellant notes that such polyatomic anions containing oxyanions formed from a metal such as chromate would be structurally different from the deposited chromium ions formed from chromic acids in solution with phosphoric acid, sulfuric acid, or others disclosed in LIN. Thus, the Appellant submits that the claimed peel strength coating is not the same as LIN's anti-tarnish coating.

On page 4 of the Examiner's Answer, the Examiner asserts that LIN is silent about the surface roughness of the copper foil. However, this is not the case, since LIN clearly teaches forming a plurality of dendrites on the surface, and refers to other known methods for roughening the copper alloy foil surface. (LIN '520, c. 3, ll. 19-20, 33-47).

On page 4 of the Examiner's Answer, the Examiner asserts that in view of LIN's teachings, one skilled in the art would choose the claimed surface condition because the discovery of workable ranges would be within the ordinary skill in the art. However, one considering LIN's teachings would have only discovered

the workable ranges of the degree of roughness, and would not have been led to use a smooth copper foil as Appellants have.

Accordingly, one considering LIN would have been led in a direction divergent from the path taken by the Appellant. The Federal Circuit has held that a reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be led in a direction divergent from the path that was taken by the Appellant, or the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the Appellant. *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). Thus, the Appellant submits that the present claims are not obvious in view of Lin, which only discloses roughened surfaces and teaches away from the use of smooth surfaces.

On page 4 of the Examiner's Answer, the Examiner asserts that LIN teaches a copper foil with unknown surface roughness. However, LIN teaches a clearly teaches a roughened surface by forming a plurality of dendrites on the surface, and refers to two patents issued to Polan et al. that disclose this treatment. Thus, LIN does teach a copper foil having a known roughened surface.

On page 5 of the Examiner's Answer, the Examiner asserts the view that "smooth" and "rough" are relative terms, and LIN describes a copper foil similar to that of the appellant's. However, LIN clearly teaches that "to maximize adhesion, it is desirable to roughen the surface of the foil", such as by forming dendrites. (LIN, c. 1, ll. 34-35). Contrary to LIN, the present application teaches a

divergent path of using a smooth or a low profile surface, e.g., less than 1 μm Rz, where Rz is the average of five peak to valley distance measurements as measured using a surface profilometer. (see paragraph [0025] of the present application as published in 20040166017). Thus, the Appellant asserts that "smooth" and "rough" are not relative terms.

On page 5 of the Examiner's Answer, the Examiner also asserts without any support or basis in fact that the claimed "peel-strength enhancing coating is equivalent to LIN's anti-tarnish treatment." The Examiner then asserts that "LIN's copper foil has a smooth surface roughness or else it would not need the dendrites." The Examiner's deductions only emphasize the fact that LIN teaches a need for forming dendrites or other surface roughening treatments.

Accordingly, one considering LIN would have been led in a surface-roughening direction, divergent from the path taken by the Appellant. Moreover, LIN's teaching of roughening the foil surface would have been the only known predictable solution that a person of ordinary skill in the art would have found obvious to try. *KSR International Co. v. Teleflex Inc.*, No. 04-1350, slip op. at 9, (2007) (Where there "are a finite number of identified, predictable solutions, a person of ordinary skill in the art has good reason to pursue the known options within his or her technical grasp.") Accordingly, one skilled in the art would only have been led towards the predictable solution of roughening the copper foil. As such, the Appellant submits that the present claims are not obvious in view of Lin, which only discloses roughened surfaces and teaches away from the use of smooth surfaces.

CONCLUSION

There is no teaching or suggestion in the cited references regarding the claimed smooth surface. As such, the claims are not obvious in view of the references or the Examiner's Answer. For the foregoing reasons, applicants submit that the rejection of the claims should be reversed for the reasons set forth in Applicants' Brief on Appeal and in this Reply Brief.

Respectfully submitted,

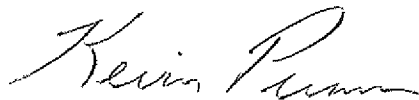


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CERTIFICATE OF MAILING

I certify that on January 16, 2008, APPLICANTS' REPLY BRIEF was filed electronically with the U.S. Patent and Trademark Office.



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